

What is claimed is:

1. A semiconductor device comprising:

a semiconductor chip provided with an upper surface and an under surface and having a plurality of pad electrodes;

5 a plurality of lead electrodes arranged corresponding to said plurality of pad electrodes and extending peripherally on the under surface side of said semiconductor chip;

connecting means for connection between said plurality of pad electrodes and said plurality of lead electrodes;

10 a seal resin layer for sealing integrally said semiconductor chip, said lead electrodes and said connecting means;

wherein each of the plurality of lead electrodes includes a thin internal lead portion having a connection part with said  
15 connecting means on the upper surface side, and a thick external electrode portion protruding toward the under surface side to form a connection part to outside;

said seal resin layer has an underside which forms substantially the same surface as the under surface of the  
20 internal lead portion of said lead electrodes, and said external electrode portion protrudes downward from the underside of the seal resin layer.

2. A semiconductor device comprising:

a semiconductor chip provided with an upper surface and  
25 an under surface and having a plurality of pad electrodes;

a plurality of lead electrodes arranged corresponding to said plurality of pad electrodes and extending peripherally on the under surface side of said semiconductor chip;

connecting means for connection between said plurality  
5 of pad electrodes and said plurality of lead electrodes;

an auxiliary electrode provided around said plurality of lead electrodes;

a seal resin layer for sealing integrally said semiconductor chip, said lead electrodes, said connecting  
10 means and said auxiliary electrode;

wherein each of said plurality of lead electrodes includes a thin internal lead portion having a connection part with said connecting means on the upper surface side, and a thick external electrode portion protruding toward the under  
15 surface side to form a connection part to outside;

said seal resin layer has an underside which forms substantially the same surface as the under surface of the internal lead portion of said lead electrodes and said auxiliary electrode, and said external electrode portion  
20 protrudes downward from the underside of the seal resin layer.

3. A method of manufacturing a semiconductor device comprising the steps of:

using a lead frame composed of a plate-like body having an uneven upper surface and a plain under surface, said  
25 plate-like body comprising a first thin portion for mounting

a semiconductor chip provided with a plurality of pad electrodes, a plurality of first thick portions provided around said first thin portion for forming lead electrodes respectively arranged corresponding to the pad electrodes of  
5 said semiconductor chip, a second thin portion provided between said plurality of first thick portions, a third thin portion provided for surrounding said plurality of first thick portions, and a second thick portion provided around said third thin portion;

10 sealing integrally said semiconductor chip, said lead electrodes and connecting means up to the same surface as that of all thin portions with a seal resin layer, after making a connection between said plurality of pad electrodes of said semiconductor chip mounted on said first thin portion and said  
15 plurality of lead electrodes by said connecting means; and

removing said first, second and third thin portions by etching so that each of said plurality of lead electrodes includes a thin internal lead portion having a connection part to said connecting means on the upper surface side and a thick  
20 external electrode portion protruding toward the under surface and forming a connection part to outside;

wherein said seal resin layer is formed so that the underside thereof forms substantially the same surface as the under surface of the internal lead portion of said lead  
25 electrodes, and that said external electrode portion protrudes

downward from the underside of said seal resin layer.

4. The method of manufacturing a semiconductor device according to claim 3, wherein the first, second and third thin portions have substantially the same thickness.

5 5. A method of manufacturing a semiconductor device comprising the steps of:

using a lead frame composed of a plate-like body having an uneven upper surface and a plain under surface, said plate-like body comprising a first thin portion for mounting  
10 a semiconductor chip provided with a plurality of pad electrodes, a plurality of first thick portions provided around the first thin portion for forming lead electrodes respectively arranged corresponding to the pad electrodes of said semiconductor chip, a second thin portion provided between said  
15 plurality of first thick portions, a third thin portion provided for surrounding said plurality of first thick portions, a second thick portion provided around said third thin portion to form an auxiliary electrode, a fourth thin portion provided around said second thick portion, and a third thick portion  
20 provided around said fourth thin portion;

sealing integrally said semiconductor chip, said lead electrodes, said connecting means and said auxiliary electrode up to the same surface as that of all of said thin portions with a seal resin layer, after making a connection between said  
25 plurality of pad electrodes of said semiconductor chip mounted

on said first thin portion and said plurality of lead electrodes by connecting means and making a connection between said lead electrodes and said auxiliary electrode; and

removing said first, second, third and fourth thin  
5 portions by etching so that each of said plurality of lead electrodes includes a thin internal lead portion having a connection part to said connecting means on the upper surface side and a thick external electrode portion protruding toward the under surface and forming a connection part to outside;

10 wherein said seal resin layer is formed so that the underside thereof forms substantially the same surface as the under surface of the internal lead portion of said lead electrodes and said auxiliary electrode, and that said external electrode portion protrudes downward from the underside of said  
15 seal resin layer.

6. The method of manufacturing a semiconductor device according to claim 5, wherein the first, second, third and fourth thin portions have substantially the same thickness.

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